# Case Study

# Present & Future towards microgrids as a part of their Social Study

**Speaker:**

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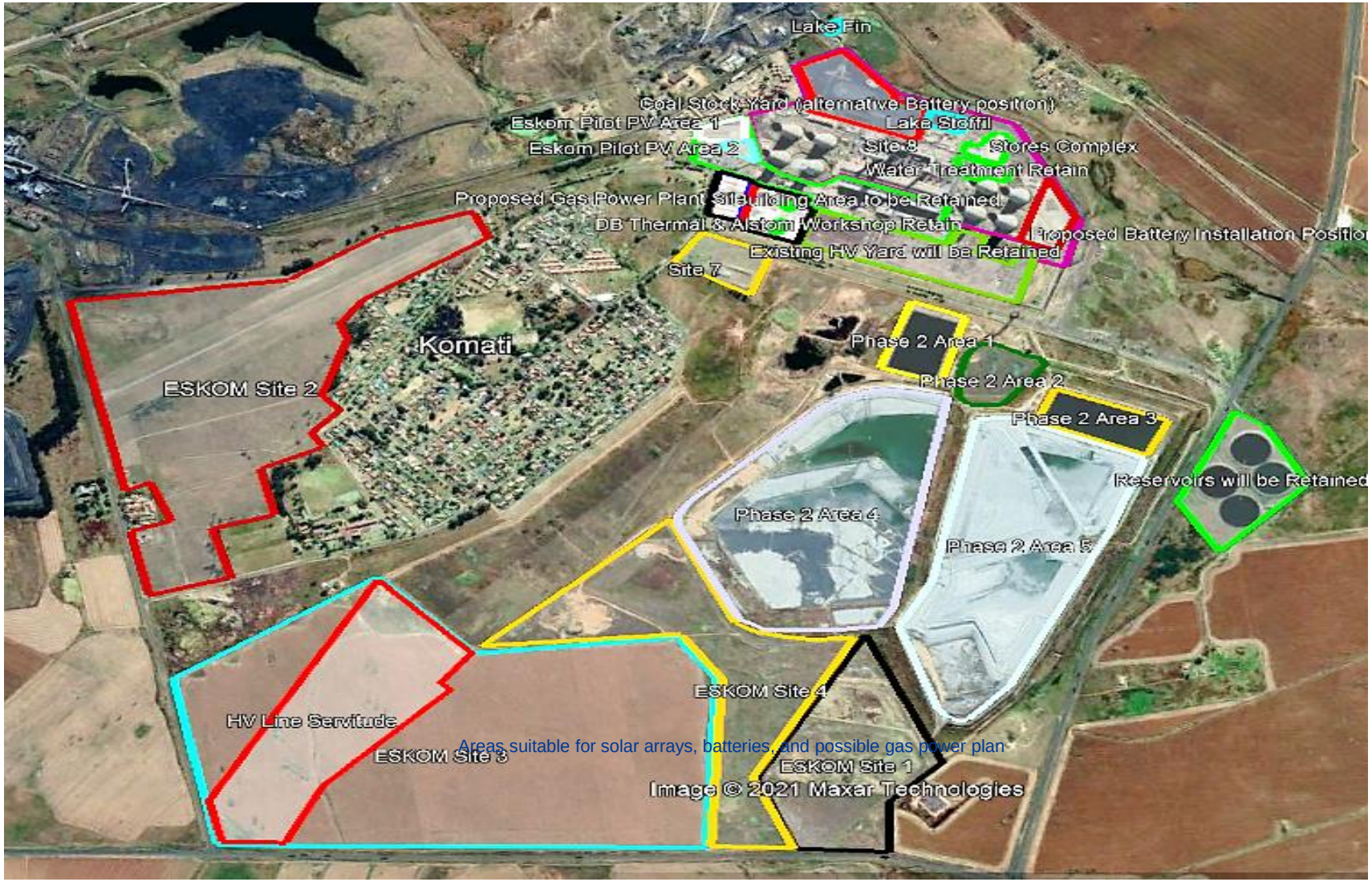
# Komati PS – Eskom's flagship site to demonstrate our Repowering & Repurposing ambitions




## Independent Assessments of Repowering & Repurposing Potential

***1.* Potential Repowering Initiatives:**

- Solar (~100MWp) + 50MWp Ash Dam
- Battery Storage (600MWh)
- *Gas (possible 500MW – 1000MW)*
- Wind (50-70MW)
- SCO

**2. Repurposing Initiatives:**

- Microgrid Assembly Plant
- AgriVoltaics (500kWp)

**3. RE Training Facility**

- Enabling, Empowering, Reskilling, Upskilling
  - ✓ Skills required for long term jobs in the renewables value chain.
  - ✓ Curriculum developed
- SMME development & Incubation

**4. Additional SEIM Initiatives being Assessed:**

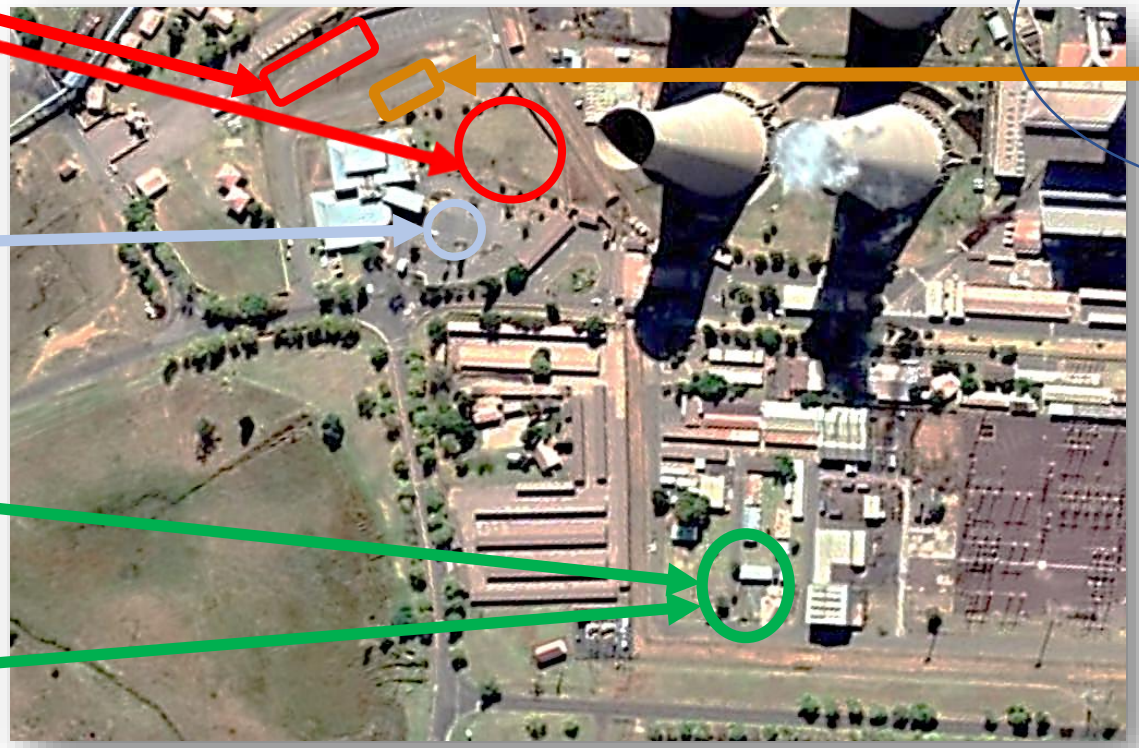
- Enabling, Empowering, Reskilling, Upskilling
  - ✓ Microgrid Assembly
  - ✓ Farming (Aquaponics, Raised beds, etc)
  - ✓ Enterprise Development
  - ✓ SMME Incubator

# Komati PS – Repowering and Repurposing initiatives

AgriVoltaic Demo

CMG Demo

CMG Assembly Plant



Ash Geopolymer Demo

**KEY CONSIDERATIONS**

- Sustainability of Initiatives
  - Value Proposition
  - Business Model
  - Business Case
- Staff Retraining & Reskilling Training Centres
- Community Upskilling
- Localisation of Initiative Value Chains
- Community Enterprise Ownership
- Multi-year SMME Incubation

# Containerised Microgrids– Strategy & technology

## Deployment Strategy

- Strict Adherence to technical specification and standards for each system component conforming to Eskom engineering specifications and national standards(NRS).
- Administration of an off-grid cost reflective tariff in line with new legislative regarding Distributed generation.
- Strategic sourcing of system components to adherence to recommended system costing and specification. Leveraging SD&L and SMME & Public Private participation to bridge the skills gap whilst stimulating economic growth in the sector
- Leverage INEP funding and other funding mechanisms to categorise early deployment areas to accelerate the electrification rate.
- De-risk the initiative by leveraging SPV & PPP models to lower overnight costs and enhancing installations ops and maintenance.
- Formulate Training and up-skilling of staff in both the private and public sector to catalyze technology adoption and installation rates.
- Establish system visibility and Integrate operations, maintenance and monitoring to legacy systems in a secure IT/OT environment(Future Smart Grid State).

## System Flexibility & Resilience

- The Microgrid system offers a high degree of configurability ,suited for different scenarios that can assist with offering network Resilience and system flexibility by managing load imbalances. and voltage rise a fall and other fluctuations on the grid.
- Individual system components such as Generation, storage and control can be customised to meet a specific network or customer need.
- Distributed Energy controllers facilitate automatic supply and demand

- A highly skilled team on Eskom Engineers have leveraged the Demonstration and Pilots portfolio with Eskom Research Testing and Development to execute Pilot projects within this area of Specialisation.
- All knowledge gained and lessons from these demonstration Pilots will be leveraged for further improvements on new products and services beyond the new energy landscape ,looking into the next horizon technologies such as Fuel-Cells, Solid state battery and storage technologies.
- The future customer domain and distributed generation are areas of focus, followed by digitalization and other trends that are leading us to the 4th Industrial revolution.

Figure 4 – 12m Containerised power plant

Figure 6 – 24Kw installed PV Panels

Figure 7 – Control & Communication Systems and Lithium Ion battery banks


Figure 1 - Ficksburg

# Distributed System Operators & DERMS deployment

## Microgrid Site Selection

**Rural Microgrid near Ficksburg**
32kWp Solar, 90kWh Storage
Battery 37%. 2 Problems Detected. Last Seen 1 Minutes Ago.

**CMG 4 in Swartkopdam**
PV Solar and Storage System
Battery 87%. Daily Reports Not Detected. Last Seen 201 Hours Ago.

**CMG 3 in Swartkopdam**
PV Solar and Storage System
Battery 10%. Daily Reports Not Detected. Last Seen 27 Minutes Ago.

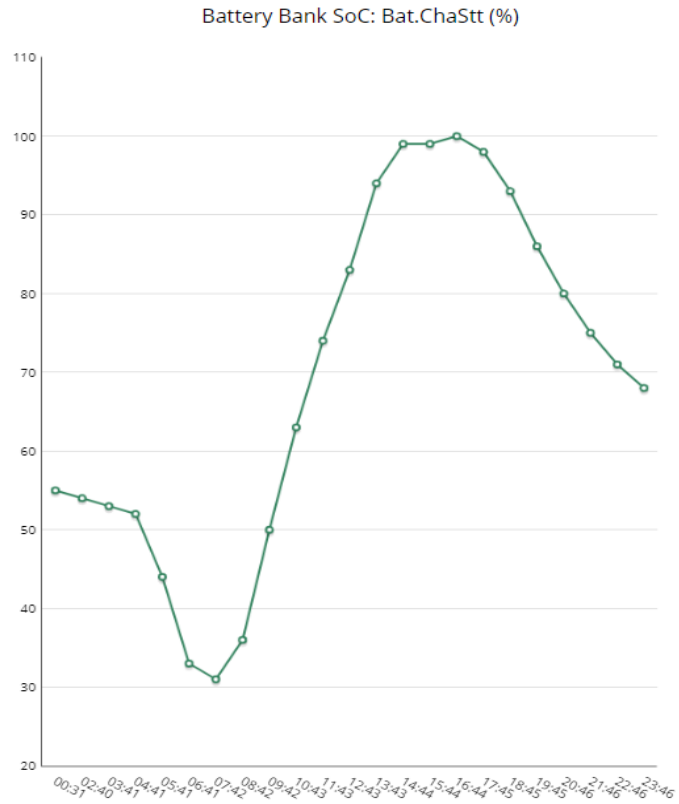
**CMG 2 in Komati in yard**
PV Solar and Storage System
Daily Reports Not Detected. Last Seen 10222 Hours Ago.

**CMG 17 in Bela-Bela**
32kW Grid-tied PV Solar and Storage
Daily Reports Not Detected. Last Seen 3 Hours Ago.

**CMG 16 at ERI**
PV Solar and Storage System
Battery 27%. Daily Reports Not Detected. Last Seen 4866 Hours Ago.

Version B.8

## System Readings Data




Date: February 2,
Hours: From: 0
To: 23

## Security Camera Footage


February 2, 2024 4:47 PM

February 2, 2024 4:47 PM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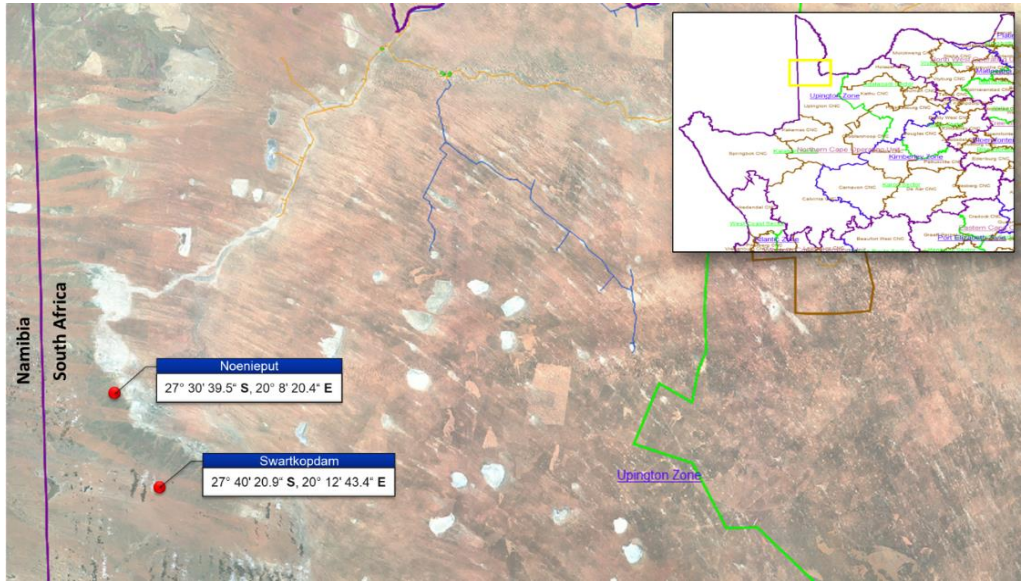
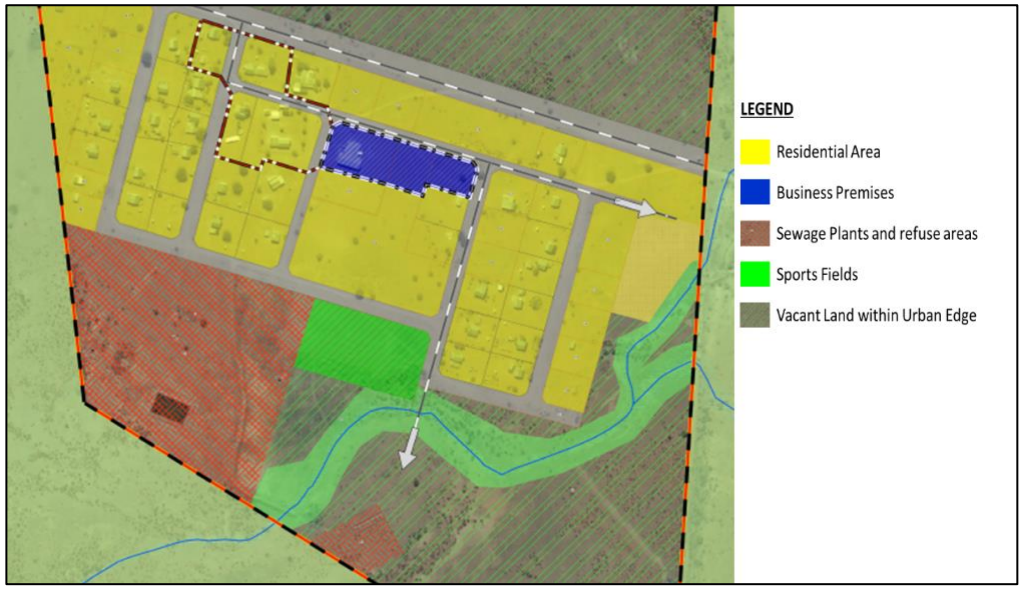
# Successful deployments of Operational Microgrids





- A feasible conventional solution to connect Noenieput and Swartkopdam is to build a 200km 132kV from Gordonia Substation and establish Noenieput Substation at Noenieput.
- Estimated cost Grid extension and uprating : R250m
- Microgrid Alternative will a fraction of the cost.

# Thank You

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